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December 17, 1997

97-RF-06514

Gary Schuetz Nuclear Material Safeguards DOE, RFFO

DELIVERY OF RECONNAISSANCE-LEVEL CHARACTERIZATION REPORT - JGM-060-97

Ref (a) Brian Larsen ltr, BDL-022-97, to J G Meyer, same subject, December 8, 1997

Attached is Reference (a), which forwarded the Building 771 Reconnaissance-Level Characterization Report (RLCR), as required by the draft Decommissioning Program Plan

An anticipated milestone in WAD 34, 771/774 Cluster Project, WBS Element 1 1 06 10 03, is to provide the Department of Energy, Rocky Flats Field Office (DOE, RFFO) with the Building 771 Decommissioning Operation Plan by March 1, 1998 The milestone completion criteria for this deliverable includes submission of the RLCR by January 2, 1998 This letter satisfies that requirement.

There is no specific format for this report, accordingly the Closure Planning Team generated this document using the Building 779 report as a reference If you have any questions, please contact me at Extension 4827

Greg Meyer

Acting 771/774 Closure Project Director

Nuclear Operations

gjh

Orig and 1 cc - G Schuetz

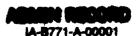
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Fred Gerdeman

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Kaiser-Hill Company, L L C

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tes interoffice correspondence

DATE

December 8, 1997

TO

J G Meyer, 771/774 Project Director, Bldg 111, X4827

FROM

B D Larsen, Closure Planning, Bldg T771J, X733

SUBJECT

Reconnaissance Level Characterization Report for 771/774 Closure Project

BDL-022-96

Attached is the final Reconnaissance Level Characterization Report for the 771/774 Closure Project, dated December 2, 1997 This report is also being submitted for inclusion into the 771/774 Closure Project Management Plan If you have comments on the report they can be forwarded to me or directly to Mitch Stockdale (X5916)

-Attachment As Stated

CC

A Dowd

D Hamrick

M Stockdale (w/o attach)

Building 771/774 Cluster Closure Project

Reconnaissance Level Characterization Report

December 2, 1997

Prepared for the U.S. Department of Energy



By WINHARDA (MI) WINU)

Date 12/5/97

APPROVALS

Document Title Building 771 Reconnaissance Level Characterization Report

Prepared By

Brian D Larsen

Date

Bldg 771 Closure Planning

Approved By

Douglas Hamnck

Date

Bldg 771 Closure Project Mgr

RECONNAISSANCE LEVEL CHARACTERIZATION REPORT FOR THE 771 CLOSURE PROJECT

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1 0 INTRODUCTION

The following information has been compiled to document a detailed walk-down, process knowledge, and analytical based characterization of the 771/774 cluster The 771/774 cluster consists of the main 771 and 774 buildings and all additions and structures attached to or immediately adjacent to buildings 771 and 774

2 0 PURPOSE.

The purpose of this report is to describe the presence of materials and isotopes that will impact the closure of the 771/774 facility cluster. The importance of the presence of these items is based on both worker safety and waste disposal/regulatory concerns. Each of the isotopes or materials has been identified through investigation of facility related documents, a thorough walk down of the facility, a review of historical data and process knowledge. The inclusion of the listed hazards is as complete as possible without delaying the creation of this document for the collection of additional empirical analytical data. The isotopes and materials of concern are contained in or are components of the process equipment and non-structural building systems or utilities. Residual contamination may also exist in the building structure. Reconnaissance Level Characterization Report (RLCR) may be used as a basis to define the required sampling needed to support facility deactivation, decontamination, and structural demolition. Additionally, the RLCR provides information to support ALARA (As Low As Reasonably Achievable) planning for the protection of the workers and environment.

3.0 SCOPE

The scope of this document is to gather enough characterization information to document the characterization of the 771 facility at the reconnaissance level as described in the Rocky Flats Clean Up Agreement (RFCA) and Decommissioning Characterization Protocol (DCP)—Additionally, this information will be used to support the generation of a Health and Safety Plan (HASP) and Waste Management Plans (WMP)—The RCLR is compared against proposed decommissioning activities to determine if those activities are feasible and to identify the need for quantitative in-process sampling and analysis—The facility closure process comprises six discrete phases, Major Hazard Reduction, Equipment Removal, Building Decontamination, Utility systems shutdown, Building Demolition, and Site Remediation—The RLCR provides information to better plan for those tasks necessary to complete these phases, with the most appropriate protection to workers and the environment

4.0 REFERENCES

- Basis for Operation Building 771 Kaiser Hill Co
- Chew & Associates, History for Building 771 at the Rocky Flats Plant, April 1992 (ref Contract No 06S10044)
- Waste Stream Residue Identification and Characterization (WSRIC) for Bldg's 771 and 774

Building 771 Chemical Control Database

5.0 TERMS AND ACRONYMS

ACM - Asbestos Containing Materials
ALARA - As Low As Reasonably Achievable

Am - Americium

Be - Beryllium

Blx - Benelex

CFC's - Chloro-fluoro-carbons

EPA - Environmental Protection Agency

HASP - Health and Safety Plan

HCI - Hydrochloric Acid

HF - Hydrofluoric Acid

Hg - Mercury

HNO₃ - Nitric Acid

HVAC - Heating ventilation and Air Conditioning

MFP - Mixed Fission Products

Pb - Lead

PCB - Polychlorinated Biphenyl's

Pu - Plutonium

RLCR - Reconnaissance Level Characterization Report

RCRA - Resource Conservation and Recovery Act.

WMP - Waste Management Plan

U - Uranium

Deactivation. The process of placing a facility in a safe and stable condition to minimize the long-term cost of a surveillance and maintenance program that is protective of workers, the public, and the environment until closure is complete Actions include the draining and/or de-energizing of non-essential systems, removal of stored radioactive and hazardous materials and related actions. As the bridge between operations and closure, based upon facility-specific considerations and final disposition plans, deactivation can accomplish operations-like activities such as final process runs, and also decontamination activities aimed at placing the facility in a safe and stable condition Deactivation does not include decontamination necessary for the dismantlement and demolition phase of closure, i.e., removal of contamination remaining in fixed structures and equipment after deactivation Deactivation does not include removal of contaminated systems, system components, or equipment except for the purpose of accountability of SNM and nuclear safety It also does not include removal of contamination except as incidental to other deactivation or for the purposes of accountability of SNM and nuclear safety

Closure. Takes place after deactivation and includes surveillance and maintenance, decontamination, and/or dismantlement. These actions are taken at the end of the life of the facility to retire it from service with adequate regard for the health and

safety of workers and the public and protection of the environment. For those buildings in which no deactivation occurs, the term includes characterization as well as the above activities The ultimate goal of closure is unrestricted release, or if unrestricted use is not feasible, restricted use of the site

Decontamination The removal or reduction of radioactive or hazardous contamination from facilities, equipment, or soils by washing, heating, chemical or electrochemical action, mechanical cleaning or other techniques to achieve a stated objective or end condition

Dismantlement: The disassembly or demolition and removal of any structure, system, or component during closure and satisfactory interim or long-term disposal of the residue from all or portions of the facility

Facilities Buildings and other structures, their functional systems and equipment, and other fixed systems and equipment installed therein, outside plant, including site development features such as landscaping, roads, walks, and parking areas, outside lighting and communication systems, central utility plants, utilities supply and distribution systems, and other physical plant features

Hazard: A source of danger (i.e., material, energy source, or operation) with the potential to cause illness, injury, or death to personnel, or damage to a facility or the environment without regard for the likelihood or credibility of accident scenarios or consequence mitigation

6 0 BUILDING HISTORY

This section provides a brief history of the Building 771/774 cluster, including significant abnormal occurrences The processes and events described below provide a historical account of the contamination incidents attributing to the facilities current condition

Building 771 began operation in 1953 Building 771 housed five major groups Plutonium Recovery, Plutonium Special Recovery, Plutonium Chemistry, Plutonium Metallurgy Research, and the Analytical Laboratory Plutonium Recovery processed a variety of plutonium-bearing residues to recover as much plutonium as was economically feasible Special Recovery Operations processed scrap metal and oxide residues containing elements and isotopes that could have otherwise contaminated or diluted the War Reserve plutonium stream Plutonium Recovery research and development groups in Building 771 supported and developed methods for recovering, separating, and purifying actinides. The Plutonium Metallurgy group assisted the design agencies and plant production in developing processes. Liquid and solid samples were received by, or prepared in, the Building 771 Analytical Laboratory Samples were analyzed for plutonium, americium, uranium, neptunium, and other radioactive isotopes. The laboratory was also used to analyze solutions for normality and for impurities present in the process streams

As one means of identifying the hazards in the building, past incidents were reviewed. Most of the abnormal occurrences occurred during production. Hazards inherent in the production processes such as operating equipment, and production volumes of various chemicals are no longer present. Also, modifications to the building and improvements in the conduct of operations based on past incidents minimize the potential for reoccurrence of the major events and many of the less severe events.

A review of the Chronology of Incidents Reported in Building 771 is presented in Chew & Associates, *History for Building 771 at the Rocky Flats Plant* Reports of radiological contamination and inhalation increased in the mid-1970s. This was due to better monitoring equipment and greater attention to monitoring of personnel Additionally, some reportability limits were lowered. Beginning in the early 1980s, incidents of exceeding nuclear material safety limits began to appear as incident reports. Major incidents are summarized below, as gleaned from the Chew reference and recent interviews with building personnel.

A large plutonium metal chip fire occurred in the Room 180 area in September 1957, seriously contaminating the entire area (metals laboratory and most of the building). One drain line from Room 180 went directly to the outfall (Walnut Creek) and may have led to contamination of the creek. Decontamination of the building (except Room 180) took approximately three to six months. Room 180 was sealed for approximately four years before it was decontaminated. Contamination remains under surface coatings in the Room 180 area (as well as other regions of the operational area of the building). Extensive renovations to the area were made in the late 1960s, after completion of the decontamination efforts. The Zone I exhaust filters were modified to provide improved filter seals and to repair heat stress damage caused by the fire

Floor drains in all buildings were sealed following the 1969 fire in Building 776 Some drains in Room 180 that had been contaminated in the 1957 fire were capped in that condition. The below grade piping in Room 149 are the only other verified contaminated piping in the floor slab.

Room 148 has been heavily contaminated several times. Several incidents have contaminated the room from floor to ceiling and wall to wall. Many incidents involved nitric acid solutions spills that etched the floor or walls. These areas could not be effectively decontaminated. After the removable surface contamination was removed, floors and walls were painted over and only fixed contamination remained.

Process Equipment throughout Building 771 has been used to purify large quantities of plutonium. Contamination occurred frequently in all tanks, process piping and bag in/bag out areas. Due to glovebox ventilation pressure surges that forced liquid out of the criticality drain cups, drains occasionally overflowed. This has resulted in routine floor and room contamination.

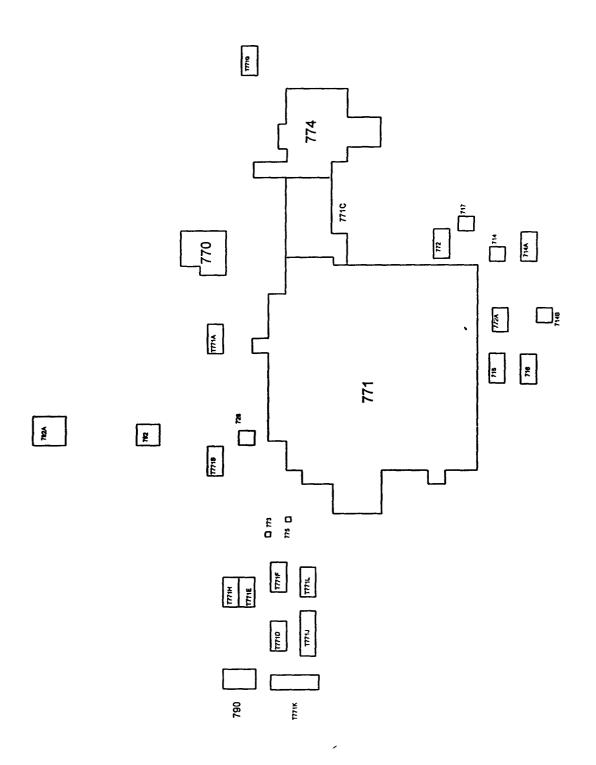
In 1989, all plutonium operations were curtailed in place. There have been limited activities since this stoppage. Gloveboxes were cleaned and wiped-down, and the HEPA filters were replaced during the initial curtailment. Although there has been no maintenance of glovebox windows, the gloves and bags have been replaced as necessary. The criticality drains on the gloveboxes have been inspected bi-weekly per OSR surveillance requirements. Except for Line 30, all criticality drains have been replaced by the new "J"- style drains.

There has been no major action to remove plutonium from the ventilation ducts, however, some Non-Destructive Assay (NDA) measurements and characterization activities have occurred. Some of the HVAC ducts contain holdup that exceeds the plutonium contamination action limits (400 grams per duct run). The planned valve gasket replacement from Teflon ™ to Gycon ™ was not finished.

Process valves have not been operated and may leak when used The cooling water supply and return system has been in limited use and the steam supply system has only been used to supply heat to the building. The plant air has been used for HVAC controls and valve manipulations. The inert air supply system has not been used since the curtailment.

The following buildings and structures presently make up the 771/774 cluster

Building/Structure #	Description
262	Diesel Fuel Tank
714	hydrofluoric (HF) Storage Shed
714A	hog shed
715	Emergency Generator
716	Emergency Generator
7 17	Sampling Shed
728	Process Waste Pit - UST
770	Maintenance and offices
771	Pu Operations
771B	Carpenter Shop
771C	Nuclear Waste Packaging/drum counting
772/772A	Fluorine/Acid Storage Building
773	Guard Post
774	Pu Waste Treatment Facility
775	Sanıtary Lift Station
T771A thru H, J	Various Trailers
thru L	



7.0 PREVIOUSLY PREPARED FACILITY CHARACTERIZATION

During the facility operating and recent risk reduction periods, data has been collected to gain a better understanding of the risks present in the 771/774 cluster This includes management of known and suspected asbestos materials, and the determination of SNM hold-up in many parts of the facility. This data has been collected in accordance with approved procedures, and records are maintained by the facility management. Other significant information such as the facility Waste Stream Residue Identification and Characterization (WSRIC) exist and shall be reviewed when planning closure activities.

8 0 BUILDING AND MATERIAL BREAK-DOWN.

The 771 facility has been divided into approximately 80 discrete units or work sets. These sets are made up of individual process lines or specific room(s) in the 771/774 facility cluster. The materials identified as items that are of concern in the characterization process are those that pose a threat to the safety of the workers and/or the environment. These hazards identified in each of the defined building sets are those items that may be present in the fixed process equipment and non-structural building components or utilities. This characterization effort makes no assumptions of those chemicals or radionuclides that may be held-up in the building structural components/concrete. Various inventory data has been obtained to support earlier building characterization and management programs. (Ref section 4.0) These include the insitu evaluation of SNM holdup in process piping and vessels, and the identification of asbestos containing materials.

9.0 ISOTOPES AND MATERIALS OF CONCERN

Americium - Isotopes of americium metal and oxides were processed in certain areas of the 771 Facility Am is produced through the normal decay of Pu, and in many cases is a contaminant of the Pu production stream

Plutonium - Isotopes of plutonium metal and oxides were processed in many areas of the 771 facility. Many areas where unclad plutonium was stored or processed were involved in flood and fire situations leading to contamination of most of the facility and equipment.

Uranium - Isotopes of uranium metal and oxides were processed in a few areas of the 771 facility. Unclad uranium was stored or processed, leading to contamination of the facility and equipment.

Mixed Fission Products - Fission products such as Cs¹³⁷, Co⁶⁰, Sr⁹⁰, etc. are present in some areas of the 771 facility. These isotopes were introduced in special operations, and were not part of the normal production/mission of the facility. Residual MFP contamination can be found in a few isolated areas of the facility.

Special Nuclear Material - SNM hold-up has been selected as a special concern due to disposal requirements and handling concerns. Concentrations of SNM such as Pu239, Am241, and U235 are present in process lines, equipment and the building structure. Insitu characterization of the SNM hold-up is presently being performed and is currently estimated to be in excess of 49,232 +/-5734 gms. Additional characterization data is being collected and should be consulted for proper closure planning.

Polychlorinated Biphenyl's - Items containing Polychlorinated Biphenyl's (PCBs) in excess of the U.S Environmental Protection Agency (EPA) regulatory limit of 50 ppm have been identified in a variety of sources EPA issued a proposed rule [Ref Federal Register 12/6/94 62788 - 62887] amending the PCB regulations. The Agency acknowledged the potential for the presence of PCBs in a wide variety of materials including

Gaskets Paints
Small Rubber Parts Plastic

Caulking Roofing/Siding Materials

Ceiling Tile Coatings Adhesive/Tape

Plasticizer Electrical cable insulation
 Electrical components Lighting equipment

Asbestos Containing Materials - ACM in the forms of Thermal Systems Insulation and non-friable forms such as Transite is present in many areas of the facility Asbestos is regulated in accordance with the Toxic Substance Control Act 40CFR761, and OSHA 29CFR1926 1101 Asbestos has also been identified in many commercial materials including

Gaskets • Window Caulking Roofing/Siding Materials • Ceiling Tile

Floor Tile and Mastic Lab Counter-tops
Pipe/duct Insulation Equipment Brakes

Current ACM management practices have identified many locations where ACM exists. Additional characterization data is being collected and should be consulted for proper closure planning.

Benelex - Benelex is a brownish masonite like material. On it own benelex is relatively inert (non-flammable) however multiple approx. O 375" benelex sheets have been glued/laminated together to increase shielding capabilities. The glues used to laminate the benelex sheets are highly flammable and virtually inextinguishable.

Lead - Elemental lead has been used as shielding on many gloveboxes and components in the 771/774 facility cluster _Additionally, lead is present in many other materials such as dry-box gloves, brass, and items such as fire suppression systems Lead metal wastes and residues are regulated in accordance with EPA 40CFR261, and OSHA 29CFR1926 62

Mercury - Mercury is known to be present in older electrical components and thermal instruments. Elemental mercury wastes and residues are regulated in accordance with EPA 40CFR261

Beryllium - Again the limited presence of beryllium can be associated with special operations in certain areas of the 771 facility Wide spread contamination associated with Be is not expected

Acidic Characteristic - Acids including Hydrochloric (HCl), Nitric (HNO₃) sulfuric (H₂SO₄), and Hydrofluoric (HF) were used in the facility production processes. It is expected that radionuclide bearing acid solutions are present in piping and vessels in the facility. Additionally, salts and other residual materials from the acids are expected to be present. Acid wastes meet EPA characteristic (corrosive) properties where the pH is < 2.0

Basic/Caustic Characteristic - Caustic chemicals (pH>7) such as potassium hydroxide (KOH) and sodium hydroxide (NaOH) were used to neutralize acidic solutions. It is expected that radionuclide bearing caustic solutions are present in piping and vessels in the facility. Caustics with a pH>12 O are regulated in accordance with EPA 40CFR261.

RCRA classified waste solvents - 1,1,1Tri chloro ethelyne (TCE) and other solvents were used in the 771 facility. These chemicals were used for their solvent properties therefore any waste resulting from their use is regulated. Containers of unused solvents may be found in the facility during the closure process. Solvents as defined in EPA 40CFR261 including the listed and characteristic solvents are present in 771

Oil - Oils such as hydraulic and machining oils were used in many areas of the 771 facility. Many reservoirs of the process equipment still contain oils, greases and other petroleum lubricants. Waste halogenated oils and resulting waste are regulated as hazardous wastes. Also see PCB's

Chloro-fluoro-carbons - CFC's such as freon are primarily present in cooling and refrigeration units. Additionally, it has also historically been used as cleaning solutions. CFC's are known to be present in some facility HVAC equipment.

	Building 771 Reconnaissance Level Characterization Report Contaminati	tion/Hazard Matrix
Set	Set Description	Radioactive and/or Hazardous
Number		Substances known to have been used, processed, or stored in this
		area
	Corridor B Office Area - This set includes all of Corridor B and Offices 116,	ACM
	117, 117A, 118, 118A, 119, 119A, 119B, 119C, 119D, 124, 125, 125A,	
	125B, 125C, 125D, 125E, 126, 126A, and 126B. Room 116 contains the	
	connection point to the plant fiber optics system.	
2	Corridor F Office Area - This set includes Room, 103, 104, 105, 105A,	ACM, CFC's
	105B, 107, 109, 110, 110A and 110B, Corridor F, Criticality Panel and	
	walls	
ယ	Locker Room Area - This set includes both the Men's and Women's locker	ACM, PCB's
	rooms, the janitor's closet and the laundry cage in the Men's locker room	-
	This equipment consists of lockers, benches and plumbing fixtures	
4	129 Maintenance Area - this set includes Room 129, 129A, 129B, 129C,	ACM, Pb, CFC's, PCB's
	129D, 129F, 130, 131, 132, and 132A, Dock 2; machine tools, wall, and	
တၢ	Room 141 - This set includes Room 141, concrete pedestals, concrete	Pu, U, Pb, Acid, Base
	walls, and presents extremely high Pu contamination problem Room 141	
	was an SNM storage vault and then a pump room.	
တ	Room 114 Glovebox 1 - This set includes Glovebox 1, Tanks D-705, D-	Pu, Am, SNM, ACM, Pb, Acid,
-	706, D-713, D-714, D-715, D-716, D-764 and D-765, piping and valves	Base, Oil, Hg
	Glovebox 1 was used to precipitate Americium for solution and is	
	extremely radioactively hot	
7	Room 114 Glovebox 2 - This set includes Glovebox #2, piping and the	PU, U SNM, ACM, Pb, Acid,
	shielded drum storage area on the south wall of Room 114 Glovebox #2	Base ,
	was used for plutonium metal dissolution and other miscellaneous	
	processing	

The glovebox was used as a sampling station for those tanks listed above	D-553 and D-554 Also included is shielding wall around the tank farm	tanks D-949, D-950, D-951, D-952, D-953, D-954, D-955, D-546, D-547,	14 Room 114 Glovebox 12 - This set includes Glovebox #12, valves, piping,	evaporating plutonium nitrate solutions.	14 (new), Tanks D-507, D-508, D-509, D-510, Glovebox 11 was used for	13 Room 114 Glovebox 11, (New) 14 - This set includes Gloveboxes 11 and	piping and valves. These were used for storing calcined plutonium oxide	12 Room 114 Glovebox 8, 8E, 9 - This set includes Gloveboxes 8, 8E and 9	has the Flourinator Hydrofluorinator Scrubber.	Lines 6 and 7 Glovebox contains the Hydrofluorinator and Glovebox 6	piping and valves Glovebox 7A contains the Nash Vacuum pump for	Tank D-7, cinderblock shielding walls, electrical control panels; pumps	11 Room 114 Glovebox 6, 7, 7A - This set includes Gloveboxes 6, 7 and 7A,	heat exchanger	shells and fixtures There are 3 spray leach	acid spray leaching system used to remove (leach) metals from plutonium	549,D-550,D-551,D-552,D-609, and D-610 This system was a hot nitric	10 Room 114 Glovebox 5 - This set includes Glovebox 5, Tanks D-548, D-	& 5	control panels Gloveboxes 5A and 9A con	4, 5A, 9A, and 22, tanks D-6, and D-967, piping, valves, motors and	9 Room 114 Gloveboxes 4, 5A, 9A, and 24 - This set includes Gloveboxes	Plutonium Oxides	and hot tool storage cabinets Glovebox 3	Thom it allowed a - Illis set illiances Glovebox o, valit stolage aleas
tion for those tanks listed above	ing wall around the tank farm	3, D-954, D-955, D-546, D-547,	s Glovebox #12, valves, piping,		-510, Glovebox 11 was used for	set includes Gloveboxes 11 and	toring calcined plutonium oxide	cludes Gloveboxes 8, 8E and 9,	ber.	drofluorinator and Glovebox 6	the Nash Vacuum pump for	etrical control panels; pumps,	cludes Gloveboxes 6, 7 and 7A,		There are 3 spray leach hoods, 2 FulFlo filters, and a	e (leach) metals from plutonium	10 This system was a hot nitric	Glovebox 5, Tanks D-548, D-		Gloveboxes 5A and 9A contain vacuum pumps for lines 16	piping, valves, motors and	- This set includes Gloveboxes		Glovebox 3 was the dissolution line for	Glovebox 3, vault storage areas
			Pu, Pb, ACM		CFC, Hg	Pu, SNM, ACM, Pb, Acid, Oil,		Pu, SNM, Pb				Base, Hg	Pu, SNM, ACM, Pb, Acid, Oil				Acıd, Oıl, Base, Hg	Pu, U, SNM, ACM, Blx, Pb, Be,			Base, Oil	Pu, SNM, ACM, Pb, Be, Acid,			ru, olvivi, Acivi, ru, Aciu, ng

T ACE	to incinerate platforming contaminated combinetibles	_
<u>-</u>	Room 149 Gloveboxes 33, 37, 38 and 39 - This set includes Gloveboxes 33, 37, 38, and 39 and tanks D-5, D-176, D-177. This system was used	22
	Control Cell and Air Handling Unit	
on Pi II Ph	Room 149 Process Room and C-Cell - This set includes the Contamination	21
	Drum counters and scales; exhaust fans and motors; interior walls and	
Of (Pu, U Am containerized) Pb, Oil	Annex Area - This set includes Rooms 301, 302, 303, 304, 305 and 306	20
	control panel, elevator cage and hydraulic unit.	
Oil	Elevator Area - This set includes Rooms 142, 145, and 242; electrical	19
	contains two Nash Vacuum pumps	
	71, D-72 and D-73, motors; pumps, piping and valves Glovebox 18	
D- Pu, U, SNM, ACM, Pb, Acid, Oil	Room 114A Glovebox 18 - This set includes Glovebox 18, Tanks D-70, D-	18
	was to convert plutonium tetraflouride to plutonium metal.	
· ·	system was inerted with nitrogen when it was operational. The process	
	glovebox system for Reduction and Button Break Out. This glovebox	17
	17, two motor generator sets, ovens and control panels. Contains the	
box Pu, SNM, Pb, Oil	Room 114 Glovebox 17 - This set includes Room 112 and 114B, Glovebox	
	calcination of plutonium peroxide to plutonium oxide.	
	for plutonium peroxide precipitation and Glovebox 16 was used for	
sed Hg	electrical control panels, pumps, piping and valves Glovebox 15 was used	
 Pu, SNM, ACM, Pb, Acid, Oil, 	Room 114 Glovebox 15 and 16 - This set includes Gloveboxes 15 and 16	16
	heated evaporator used to concentrate plutonium solutions for batching	
eam	solutions for the precipitation process Glovebox 14 (old) contains a steam	-
	overhead Glovebox 13 is a piping manifold system used for batching	
	D-545 Also included is shielding wall around tank farm and piping in	
	D-503, D-504, D-505, D-506, D-507, D-508, D-509, D-510, D-544, and	
	which is attached to Glovebox Old 14, and Tanks D-500, D-501, D-502,	
Pu, SNM, ACM, Bix, Pb, Acid,	Room 114, Glovebox 13 and (Old) 14 - This set includes Glovebox 13	5

		Т	T	т	т	Ι	
မ	1	28	27	26	25	24	23
Tanks D-451, D- , D-469, D-470, Also included is ical control tion Gloveboxes	Tanks D-78 and D-79, piping and valves. Glovebox 40 contains two Bingham vacuum pumps for the House Vacuum System. Glovebox 44 contains a Bingham pump for the House Vacuum System.	ď		Room 149 Glovebox 29 - This set includes Glovebox 29 and Tanks D-360, D-361, D-362, D-363 and D-364. Also included is piping and valves Glovebox 29 was a laboratory waste processing glovebox with a chloride ion exchange	ge racks and or materials	Room 149 Glovebox 26 - This set includes Glovebox 26, Tanks D-979, D-980, Scrubbing Towers and D-982, Also included is piping, valves, pumps and motors. Glovebox 26 contains the Fume Scrubber pumps.	Room 149 Gloveboxes 23, 24 and 25 - This set includes Gloveboxes 23, 24, and 25; Tank D-928, shielding wall; piping and valves Gloveboxes 23, 24, and 25 were used as cascade dissolver lines.
Pu, U, SNM, ACM, Blx, Pb, Be, Acid, Oil Base	Pu, ACM, Pb, Acid, Oil, Base	Pu, Pb, Acıd, Base	Am, Pu, SNM, ACM, Pb, Acid, Oil, Base	Pu, U, SNM, ACM, Pb, Acid, Oil, Base, CFC	PU, ACM, Pb	Pu, ACM, Acid, Oil, Base	Pu, U, SNM, ACM, Pb, Acid, Hg

	31	Room 149 Gloveboxes 43A, B, C, and D - This set includes Gloveboxes 43A, 43B, 43C and 43D, piping and valves. This lie was used for graphite scarfing, pipe cleanout, and filter disassembly. 43B is a Anion Exchange Purification Glovebox Room 149 Glovebox (new line 30) - This set includes Glovebox 30 (New) Tanks D-1925, D1926, D-1927, D-1928, D-1930, D-1931, D-1932, D-	Pu, U, SNM, ACM, Bix, Pb , Hg, Be, Acıd, Oıl, Base Pb, Oıl
	ω <i>Ν</i>	Room 149 Glovebox (new line 30) - This set includes Glovebox 30 (New) Tanks D-1925, D1926, D-1927, D-1928, D-1930, D-1931, D-1932, D-1934, D-1935, D-1936, D-1937, D-1939, D-1940, D-1941, D-1942, D-1943, D-1944 and D-1945 This new glovebox system, tanks, electrical control panel, valves and piping were never put into service. There are also two large water wall shielding walls that are cold. This is a 35 ft x 40 ft area that the equipment removal would free up work space for other projects in Room 149. The system was never field into the process system.	Pb, Oil
	33	Room 149 Tank Farm - This set includes Tanks D-931, D-932, D-933, and D-934, the shielding walls around the tanks, piping and valves	Pu, Blx, Pb, Acıd
	34	Room 148 Process Area - This set includes Room 148, Tanks D1-976, D-1977, D-1978, D-1979, D-1984, D-1987, D-1990, D-1991, D-1992, and D-1993. This area has annular tanks in it that were never but into service	РЬ
		and should be cold (non-contaminated) Removal of these tanks and some loose equipment would open up a space approximately 20 x 60 and would be a good candidate for a size reduction area. 1200 sq ft of floor space	
	ယ္	147 Office Area - This set includes Rooms 140B, C, D, & #, 147, 147A, B, C, D, & E, Training glovebox, the internal walls and doors. These rooms were used as offices, plutonium can scanners, and storage. This was originally designated as the process control room.	Pu, U ACM, Pb, Oil, CFC
_		originally designated as the process control room.	

39 Room 182A	38 Room 182 Pr 202, 203, 20 225, 227, 22 room contain hooked into t contaminate	37 Room 181A Process Are drums of High Level Wei before an NDA assessmithe holdup This set inclin D-1401, D-1402, D-1415, an electrical parvalves and piping 1700 extraction process for U	Gloveboxes N Gloveboxes N SR12, Tanks 1007, D-100 1019, D-102 1050, D-105 1066, D-106 were used fo set of proces contaminates a vault type s
Room 182A Process Area - This set includes Gloveboxes 261, 262, 263,	Room 182 Process Area - This set includes Room 182, Gloveboxes 201, 202, 203, 204, 205, 206, 207, 208 209, 213, 214, 215, 221, 223, 224, 225, 227, 228, 229, 241, 242, and an overhead conveyor system. The room contains a number of gloveboxes that are new and were never hooked into the system. These boxes would be remove first so as not to contaminate them. Removal of the rest of the equipment would follow	Room 181A Process Area - The west end of the room contains 55 gal drums of High Level Wet Waste. This material will need to be moved before an NDA assessment can be performed to get an accurate value of the holdup This set includes Room 181A, Glovebox SR-14, Tanks D-1400, D-1401, D-1402, D-1406, D-1407, D-1409, D-1410, D-1411, D-1414 and D-1415, an electrical panel, a scrubber refrigeration unit, and associated valves and piping 1700 sq ft of floor space. SR-14 is a solvent extraction process for U	Room 146 Process Area - This set includes Rooms 146, 146A, and 146C, Gloveboxes MT1, MT2, MT3, MT4, MT5, MT6, MT7, MT8, SR11 and SR12, Tanks D-1001, D-1002, D-1003, D-1004, D-1005, D-1006, D-1007, D-1008, D-1009, D-1010, D-1011, D-1012, D-1013, D-1014, D-1019, D-1020 D-1022, D-1023, D-1024, D-1032, D-1033, D-1044, D-1050, D-1051, D-1053, D-1054, D-1062, D-1063, D-1064, D-1065, D-1066, D-1067 and D-1069. These gloveboxes, tanks, pipes and vaults were used for a process called Special Recovery. Special Recovery was a set of processes to recover plutonium from materials containing other contaminates. This area also contained a fluidbed flourination system and a vault type storage room.
Pu, U, SNM, ACM, Pb, RCRA,	Pu, U, SNM, PCB, ACM, Blx, Pb, Hg, Be, Acid, RCRA, Oil	Pu, U, SNM, ACM, Pb, Hg, Acid, Oil, CFC, Base, RCRA	Am, PU, U SNM, MFP, ACM, Blx, Pb, Hg, Be, Acid, RCRA, Oil, CFC, Base

	would open up 1900 sq ft of floor space in the building.	
	•	44
ACM, Pb, Pu, RCRA, Oils, CFC	Room 179 Maintenance Area - This set includes Rooms 178, 179, 179A,	
	Waste Spaces contaminated from 1957 fire.	
-	some cold gloveboxes and tanks in R180D and everything else will be Tru-	
	D-729, D-730, D-80, D-81, D-82, D-83, D-84, D-85 and K-30 There are	
	1819, D-2, T-5, %-6, T-7, T-8, T-22, T-25, T-26, D-1830, D-1831, D-728,	
	D-1805, D-1809, D-1010, D-1811, D-1813, D-1816, D-1817, D-1818, D-	
	E50, E51, F20, F30, F60 F70, K10, K20 and K30; Tanks D-1803, D-1804,	
	A31, A32, A51, A52, A53, D1, D2, D3, E10, E11, E20, E30, E31, E32,	
Hg Acid, RCRA, Oil, CFC, Base	180B, 180C, 180D, 180E, 180F, and 180K, Gloveboxes A10, A20, A30,	
Pu, U, SNM, MFP, ACM, BIx, Pb,	Room 180A thru F and K Process Area - This set includes Rooms 180A,	43
	cabinets and office furniture Spaces contaminated from the 1969 fire	
	180L. This is just an office area and a corridor (L). This area contains	
ACM, RCRA	180 Office Area - This set includes Room 180G, 180H, 180I, 180J and	42
	gloveboxes and B-Boxes are Tru-Waste.	
	Room 187 has a set of cabinets that are cold, the rest of the equipment,	
	Storage Vault (188). The office area (186A) has desks and cabinets and	
-	187E, and Hood 187F This was an R&D area (186/187) and an SNM	
RCRA, Oil	and 188, Gloveboxes 862, 863 864, 865, 866 187A, 187B, 187C, 187D,	
Pu, U, SNM, ACM, Pb, Hg,	Room 186 Process Area - This set includes Room 186, 186A, 186B, 187,	41
	space	
	storage room with supplies that need to be removed 1700 sq ft of floor	
	Storage Vault full of Special Nuclear Materials. Room 185 is a small	
	Room 183 is full of High Level Residue drums. Room 184 is a Residue	
Pu, U, Pb, ACM	Room 183 Storage Area - This set includes Room 183, 184 and 185	40

ACM, Oils
158 Lab Area - This set includes Rooms 158,1 59, 160, 165, 166A, 116B, 168 and 169, Gloveboxes 158 North, 158 South, BX1, BX2, BX3, BX4, BX5, BX6, BX7, BX8, BX9, Hood 2, 663A, 663B, 663C, and 664 This set contains gloveboxes and B-Boxes used for laboratory analysis of Plutonium, Americium and Uranium. This are also contains the Calorimeters and the Standards Laboratory where Standards for counting
157 Stock Room Area - This set includes Room 157. This area was an R&D support area until it was converted to a stock room/storage area in 1992
151 Radiation Control Area - This set consists of Rooms 135A, 135B, 151, 151A, 151B, 151C, 151E, 151F, and 152 This includes the RCT areas, SAAM panel and Decon showers
164 Lab Area - This set includes Room 154, 155, 155A, 156, 156A, 161, 162, 163, and 164, Boxes 49, 50, 13, 12, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 72, 73, 74, 79A, 79B, 80A, 80B, 81A, 81B, 82A, 82B, 83A, 83B, 98, 99, 100, 101, 102, 103, Flame Hood 77, Flame Hood 94, and Chem Hood, Propane System, piping and valves.
Room 174 Process Area - This set includes Rooms 172, 174, 175, and 176, Gloveboxes A1, A2, A3, A4, and A1097; Tanks D-1081, D1082, D01083, D-1084, D-1085, D-1086, D-1087, D-1088, D-1089, D-1095, D-091(N), and D-091(S)There are six storage cabinets and a refrigeration unit that are either cold or at the very least Low Level Waste. There are vessels gloveboxes and scrubber system that without decontamination would be Tru-Waste.

Pu, U, ACM, CFC, Oil	771 HVAC - This set includes Zone 1 and Zone 2 HVAC ducts and the concrete stack	60
N/A	indirect/Direct Evaporative Cooling Area - This set includes the 8 new intake air systems, piping, valves, electrical distribution and control panels, and the metal building	ပ (
Pu, U, ACM, Acid, Base	Corridors A, D, E, G, H, Stairwell 1,2,3, 127 Utility Room and Tunnel Area - This set includes Corridors A, D, E, G, and H, stairwells 1, 2, and 3, Room 127, Tunnel (only to south outer wall of Bldg 771), security equipment at Guard Station, lockers, doors and piping	58
Pu, ACM, Acid, Base, Oil	309 Tank Area - This set includes Room 280, 281A, 280B, 281, 281A, 281B,2, 282A, 282B, 282C and 282D, filter elements, cinderblock walls and doors Tanks 309E/309W collect liquid from sumps, sinks, and decon showers in B771	57
Am, Pu, U SNM, MFP, PCB, ACM, Pb, Hg, Acid, RCRA, Oil, CFC, Base	249 HVAC Exhaust and Utilities Area - This set includes Rooms 229, 230, 231, 241, 245, 246, 246A, 247, 248 and 249; Zone 1 Filter Plenums, fans, motors and ductwork; Chem Make Up tanks; piping and valves	<u></u> 5
ACM, Pb, Hg, Oil	235 HVAC Supply and Utilities Area - This set includes Rooms 232, 233, 234, 235, 236, 237, 238, 238A, 239, 240, 240A, 240B, 240C, 240D, 240E and 240G, supply fans motors, plenums and walls.	ូ បា
PCB, ACM, Pb, Hg, Oil	283 HVAC Exhaust and Utilities Area - This set includes Rooms 283, 283A, 283B, 283C, 283D, 283E, 283F, 283G, 283H, 283I and 283J, the six main exhaust fans and motors, office walls, UPS system, main electrical switch gear, and control room panels	5 4
Am, Pu, U, SNM, ACM, Acid	zone 1 plenums Main Plenum Area - This set includes Room 309, Tanks D-309E and D-309W, two outside walls, piping and valves	53
Pu, U, SNM, ACM, Acid	190 Deluge Process Area - This set includes Room 190, Tank V-2, piping, exterior walls, and roof. This tank collects fire suppression water from the	52

67	66	65	64 63	62	<u>0</u>
774 Room 210 Process Area - This set includes Room 210 and 201A, Gloveboxes 1, 2, 4, 15, 206, Microwave and OASIS, Tanks 1, 2, 7, 8, 13, 14, 374A and CW Receiver. This area is located on the second floor above ground level. Operations performed are microwave vitrification, cementation for organics, neutralization and cementation of waste solutions at the bottle box.	774 Room 102 Process Area, 101, 104 - This set includes Rooms 101, 102 and 104, Gloveboxes 9, 10, 11 and 12; Tanks T-5, T-9, T-10, T-11L, T-11R, T-12, T-74, T-210A and C-1 This area is in the basement and is a support area for first stage precipitation /neutralization process. There is one storage area and stairwell entry from the second floor into Rooms 102 and 103.	774 Room 103 Process Area, 105 - This set includes Rooms 103 and 105, Gloveboxes 13 and 355, Tanks T-40, D-351 and KOH Receiver This area is in the basement and is a support area to the second stage precipitation process	774 Room 250 Storage Area, 251 - This set includes Room 250 and 251 This area was to be a replacement for the precipitation process equipment Since this did not become operational, they became a storage area 774 Room 212 Storage Area - This set includes Room 212 This area is used to store Powders for the OASIS process (oil/grease processing)	774 Room 241 Process Area - This set includes Room 24, Tanks T-201, T-202, T-203, T-294, T-205m T-206 T-207, T-208, and T210B These tanks (4) are reagent tanks and (4) batching tanks for precipitation	774 Room 202 Process Area 201, 202A - This set includes Rooms 201, 202, and 202A,, Gloveboxes 5, 6, 7, 8, and Vac Fill A pump, Tanks 1A, 1RF, 2F, 3, 4L, 4R, 5, 70, 71, 73 and a new tank. This area is know as the "First Stage" processing for solutions from B771. This area contains three gloveboxes, nine tanks, a microwave chiller and a motor control center. The piping transfer tunnel from B771 enters at the southwest corner of the room.
Am, Pu, U, ACM, Pb, Acid, Oil, Base, PCB	Am, Pu, U, ACM, Pb, Acid, Oil, Base	Am, Pu, U, ACM, Pb, Acid, Oil, Base	N/A Supply Areas No Hazardous Concerns N/A Supply Areas No Hazardous Concerns	Am, Pu, U, ACM, Pb, Acid, Oil, Base	Am, Pu, U, ACM, Pb, Acid, Oil, Base

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Residual contamination from various sources	Utilities All - This set includes Security, Fire, Steam, Plant Air, Instrument Air, Breathing Air, Domestic Water, Process Water, Gas, Sanitary Waste, Process Waste, and Electrical Systems	76
contamination from many sources		
Am, Pu, U, PCB, ACM, Pb, Hg, RCRA, MFP, Residual	771/774 Cluster Facilities,771 and 774 Structures and Cap - This set includes demolition of Buildings 771 and 774	75
Pu, U, ACM, CFC, Oil	774 HVAC - This set includes Zone 1 and Zone 2 HVAC Ducts	74
	control room, offices, conference room, break room and rest rooms	
ACM	774 Rooms 200-300 Office Area - This set includes Rooms 204, 205, 207, 208, 301, 302, 303, 304, 305 and 306. This area includes the	/3
	switchgear.	
contain silver Ag)	dock area There are two filter plenums, an office and electrical	
Oil) - tanks from #68 (Also may	This area is located on the third level and is the utilities support to the 200	
Pu, U, PCB, ACM, Pb, (RCRA,	774 Room 320 Utilities Area - This set includes Room s321, 321, 322	72
	plenum and an Uninterruptible Power Supply (UPS).	
	area is on the fourth level of the facility and contains a ventilation filter	
Pu, U, ACM, Oil, Acid, Pb	774 Room 441 Utilities Area - This set includes Room 441 and 442 This	71
	ventilation filter plenum	
reagent tanks from 241	344, and exhaust plenum. This area is on the third level and contains a	
Pu, U, ACM, (Acid, Base) -	774 Room 341 Utilities Area - This set includes Rooms 341, 342, 343 and	70
	step off pad when the rooms are posted as a Contamination Area (CA).	
	level and was the second stage precipitation area. It is currently used as a	
Base	Tanks T-40(Old) and T-42 This area is on the second floor above ground	
Pu, U, Am, ACM, Pb, Acid, Oil,	774 Room 203 Process Area - This set includes Room 302, Glovebox 17,	69
	There are two large waste oil storage tanks in Room 220.	
	and is the shipping and receiving area of drums and crates for B774	
	3, T-102 and T-103 This area is located on the second floor ground level	
ACM, Pb, (Oil, RCRA) - See #72	774 Room 200 Dock Area - This set includes Room 209 and 220, Tanks T-	89

80	79	78		77
Room 183 Drum Counter - This set includes Rooms 183, 184 185 and the Package Counter to be installed to support building closure	Room 114 and 114 A Process Rooms - This set includes Rooms 114 and 114A	Room 181A Size Reduction Area - This set includes Room 181A and Size Reduction Equipment to be installed for closure work.	715, 716, 717, 770, T771A, 771A, T771B, T771C, 771C, T771D, T771E, T771F, T771G, T771A, T771A, T771B, T771C, 771C, T771D, T771E, T771F, T771G, T771H, T771J, T771K, T771L, 772, 772A, 774A, 774B and 775 Included in these buildings and tanks are areas that contain chemical contamination and one building that contains diesel fuel in the trailer complex there are two trailers which are shower facilities, one trailer is used for restrooms and one trailer that is condemned. The rest of the trailers are used for offices. A number of the buildings contain asbestos. Two of the tanks are situated in a wetlands area, and one building is the environmental sampling station for B771's exhaust air flow.	771/77/ Out Buildings This set includes Buildings 71/ 71/10 71/10
TBD	TBD	TBD	ACM, FCB, RCRA, ACIO, Base	ACM BCB BCBA Asid Bass